

Ruston & Hornsby 44HP Assembly Instructions



The Ruston 44HP locomotive was produced in Lincoln between 1936 and 1942 and was the first to be shipped with Ruston's own diesel engine as opposed to a Lister engine. These relatively large narrow gauge locomotives were produced in a variety of gauges from 18 inches up to 42 inches and were found on many industrial, mineral and quarry railways in this country and around the world. Several examples have survived into preservation (but few are still in original form).

General Assembly Instructions

Do take time to read through the instructions and understand how the parts fit together before reaching for the glue pot. Where ever possible parts have been designed to be symmetrical but occasionally parts have to be left or right handed so take care to follow the instructions carefully at these points.

Gluing

Parts may be glued with epoxy resin and cyanoacrylate “super glues” however we highly recommend EMA “Plastic Weld” for this kit. This is a solvent that works by capillary action, i.e. hold the two parts together and apply the solvent to the join rather than applying to a surface and then pushing the parts together. *Please use in a well ventilated room!* Also recommended is “Plastic Magic”. While a little more expensive than “Plastic Weld” it is a much safer product to use and sticks nearly as many plastic types. Please note that polystyrene glues or solvents (e.g. Mekpak) will not work.

Aero modeller’s “canopy glues” such as “Micro Kristal Klear” or “Glue ‘n’ Glaze” are highly recommended for sticking the windows panes into the cab. They do not “fog” the glass and any ooze can be cleaned off the glazing with a damp cotton bud before it sets.

Painting

We suggest that that you spray paint your model (bonnet, gearbox cover and cab) with either aerosols or an airbrush but by all means use brushes if you prefer. But the basic sequence is the same.

- 1) Prime
- 2) Address any surface defects either by light sanding or filling
- 3) Re-prime as necessary
- 4) Leave the primer for a few days for it to harden
- 5) Lightly rub down the surface to leave it smooth
- 6) Paint with 2 or 3 thin coats of top coat
- 7) Pick out details such as the filler caps and bonnet grills in alternative colours

Tools

The following tools will be required:

- A sharp modelling knife or scalpel
- 1.5 mm, 2mm, 3 mm and 4mm drill bits
- A small file, sand paper or an emery board “nail file” (included in kit)
- A “0” size cross point screw driver
- A 6mm spanner or needle nose pliers

The following tools are recommended

- A cutting matt
- Round and flat section “needle files”
- Fine tipped permanent black marker pen

Suitable batteries for your model

The motor we use in this kit is rated as 12 volt and in fact runs quite happily with voltages between 6 and 12 volts. We include a 6 cell AAA battery case with this kit which will give you a nice scale 8-9 mph with alkaline batteries. Obviously feel free to substitute your preferred type of rechargeable batteries.

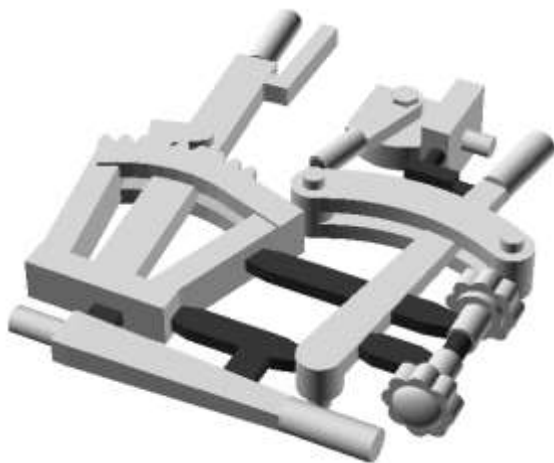
All the wiring is joined at a 5 way screw terminal block which makes substituting the battery box or adding radio control easy. Also there is a rectangular hole in the chassis floor designed to give access to the 4 pin charging sockets used by the LIPO batteries we ship in our ready to run models. With a little bit of ingenuity we're sure you can mount your own type of charging socket here if you don't want to remove the bonnet every time you want to recharge.

Step 1 – Component Preparation

The 3D printed components in this kit are of two different types, both of which need preparing in different ways.

SLS Components

(Buffers, drivers seat , radiator assembly, brake lever and control levers)



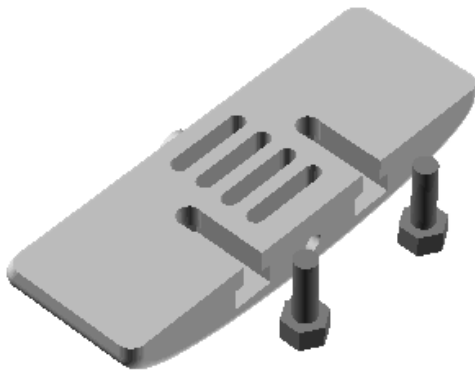
With the exception of the control levers, these components have been printed individually and need very little preparation apart from cleaning with a medium (clean 😊) toothbrush to remove any residual printing dust. The three control levers and two filler caps are joined together with little sprues (the dark areas in the picture) and will need separating with a sharp knife or scalpel. This will leave small white patches where cut which are best “coloured in” with a black permanent marker pen.

FFF Components

(main bonnet frame, bonnet top, radiator top, fuel tank, gearbox and cab roof).

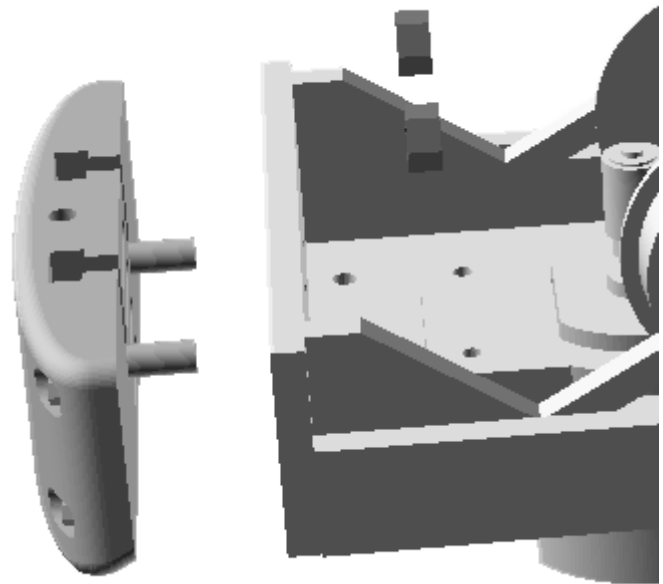
These have been printed on a machine which leaves visible layer lines which you may or may not want to live with. We have found that rubbing down with a professional nail file (one is included with the kit) is a very quick way of removing these lines. Other surface pits or grooves can be filled with a smear of model filler. Also priming with an automotive “high build” or “filler primer” from a “rattle can” is a quick way of imparting a nice smooth finish to the component.

Step 2 - Buffers



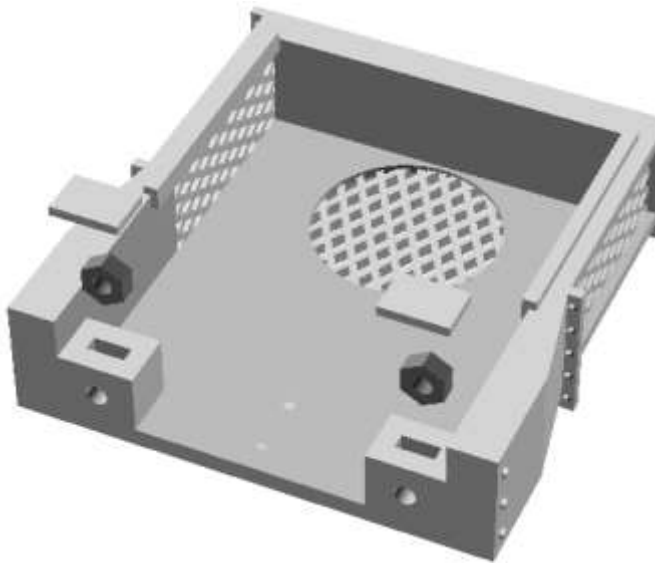
Clean out any printing dust in the black nylon buffers. Then fit two M3 bolt heads into their slots and slid up until they are on the buffer's horizontal center line.

Push the bolts through the buffer beams and secure on the inside with M3 nuts. (The one next to the switch is a bit fidelly but can be tightened with needle nosed pliers)



N.B. We also have included a single central hole in the buffer beams if you prefer to fit a different coupler.

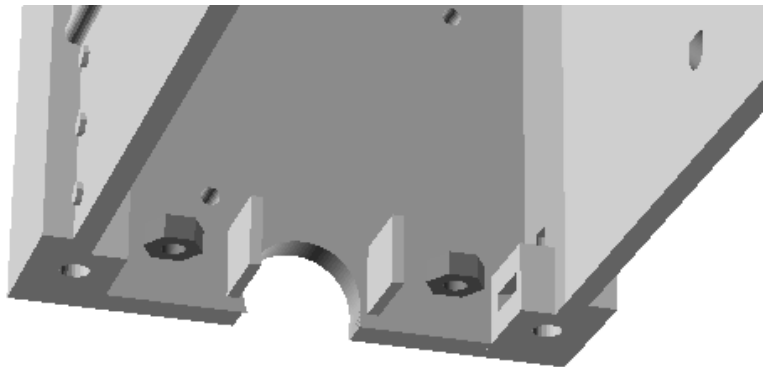
Step 3 - Bonnet



Clean out any printing dust left in the "nut cages" in the front radiator "casting" and push a M2 nut into each.

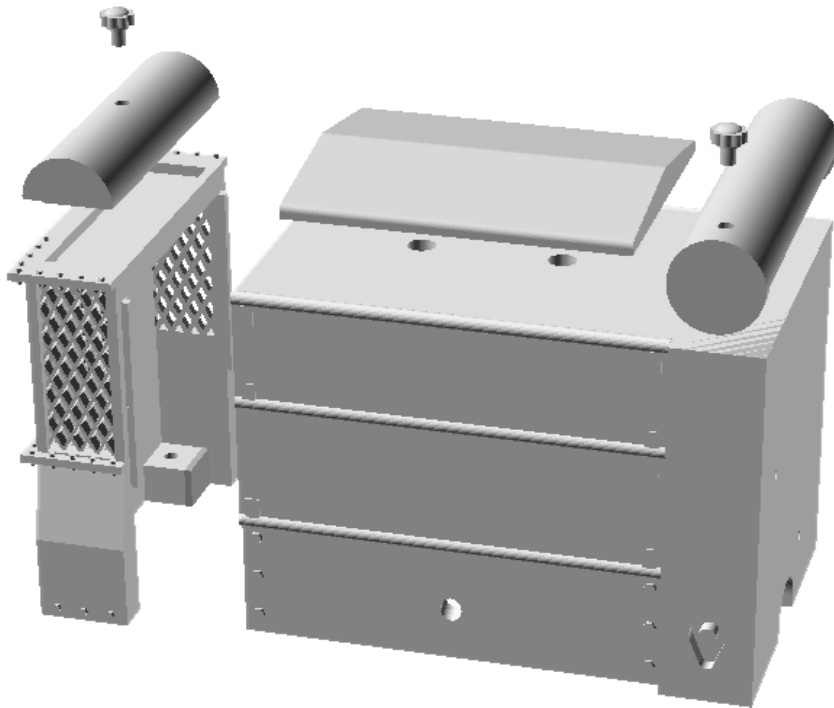
Temporarily screw in a M2 bolt into each to ensure the nut is aligned to the hole correctly and then glue a small black plastic tab (from fret C) onto the side of the cage to trap the nuts in place.

Repeat for the 2 nut cages in the back of the main bonnet casting. The printing process used for this component may leave extraneous filament in the cavities rather than dust but this can be removed by prodding with a small flat bladed jeweller's screw driver



If necessary clean off printing layer marks from the outside of the main bonnet casting with the emery board provided in the kit. Clean out the bonnet top locating holes in the main bonnet component with a 4mm drill bit

Separate the bonnet top and the cab roof. They are joined together for printing by a support which you should find snaps off quite easily. Clean up the bonnet top with the emery board, it is worth taking time to remove all traces of the printing layer lines on this particular component as it has a prominent position on the top of the locomotive.



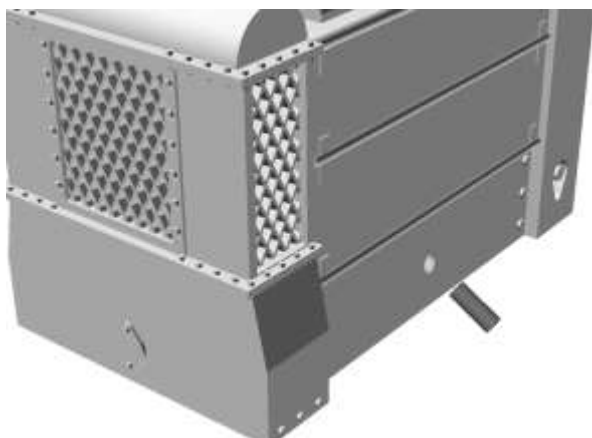
Glue the radiator casting to the main bonnet casting. Standing the 2 components on a flat surface (like a glass plate) whilst gluing ensures that the complete bonnet will sit flat on the chassis

Clean up the fuel tank casting (the large cylinder with the large cut out) and ensure it fits over top of the bonnet at the back. Most photos show the filler cap on the left hand side of the loco but we have found at least one photo with the cap on the right side. Choose which ever you prefer! Clean out the filler hole with a 2mm drill bit. Optionally glue in a filler cap now or you may prefer to leave this until after you have painted the bonnet.

Clean up the radiator top with the emery board and glue into the rectangular socket on the top of the radiator. Again clean out the filler hole with a 2mm drill bit and optionally fit the other filler cap (or leave until after painting).

Glue the bonnet top in place.

Clean out the exhaust exit hole on the bottom of the left hand bonnet side with a 3mm drill bit (the hole is angled down by about 30 degrees). Glue the supplied length of 3mm plastic tubing into this hole.

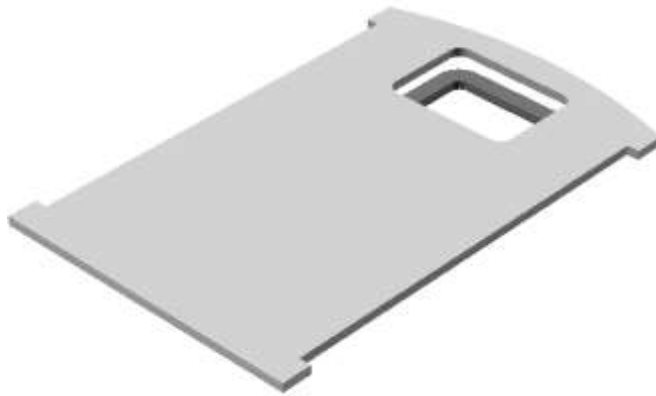


When the glue is set, file the inside tube end flush with the bonnet's inner side.

Step 4 – Drivers Cab (optional)

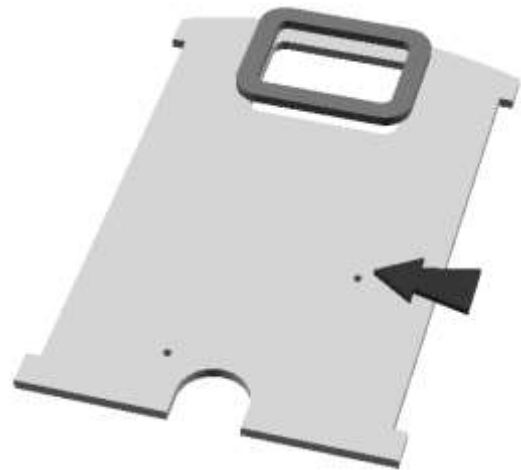
You have the option of building this kit either with or without a cab

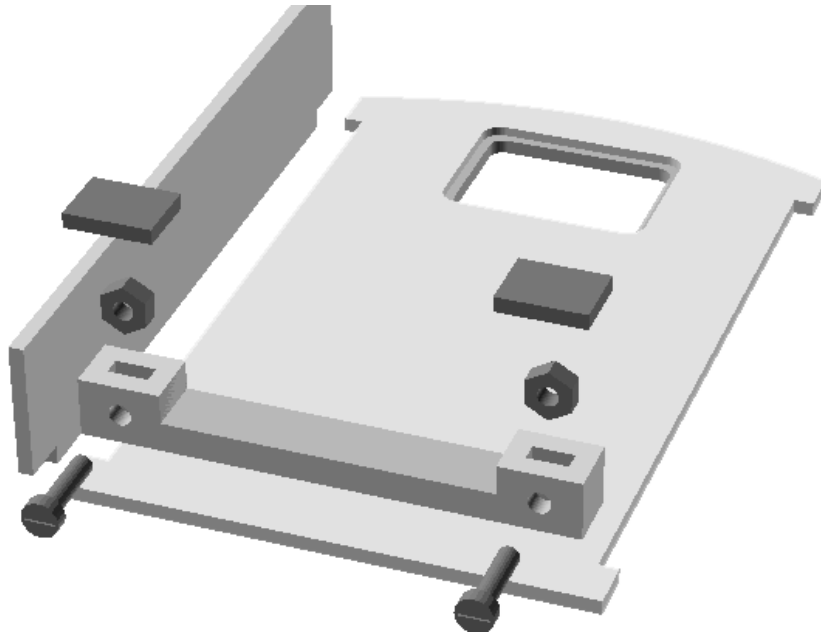
Cut the cab sides from the plastic frets and peel off the backing film. Remove the 3 window frames from fret C and glue in place around their respective window holes in the cab sheet sides.



Take care to align the parts centrally so that an even 1mm lip is created on the cab inside to glue the glazing panes into later.

Refer to the diagram on the right to ensure the cab front is the right way around so that the lever location holes are in the correct place.





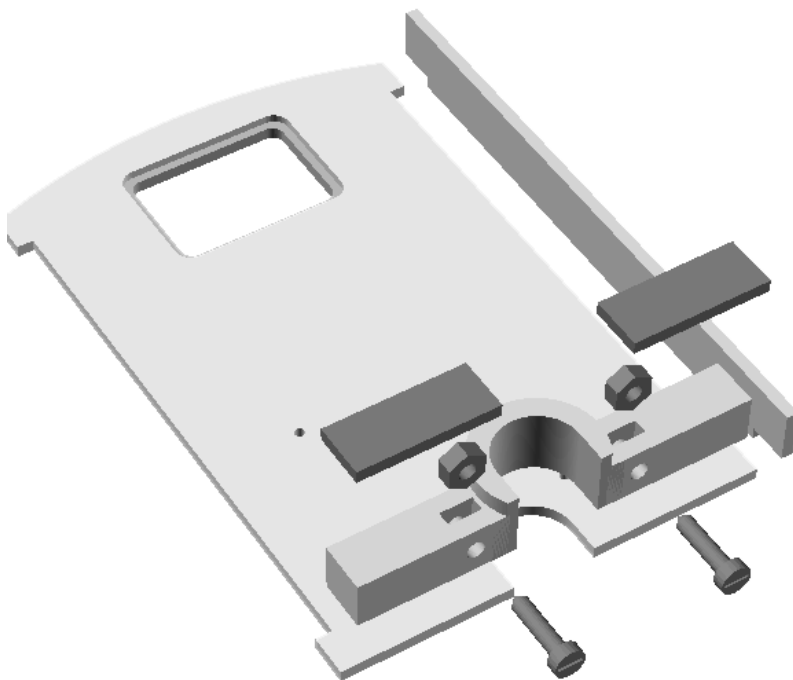
The cab locating feet come joined together with a “printing brim”. Separate them and clean up the edges with the emery board. Also ensure the nut cages are clear of detritus so that the M2 nuts can slide in.

Glue the rear cab foot to the inside of the cab back. Take care that the bottom edges of the foot and cab are flush and that the foot is centered

correctly. Push two M2 nuts into the nut cages; temporarily screw in two M2 screws to locate them correctly and then glue on two small plastic tabs (from fret C) to hold them in place.

Once the glue is dry clean up any “laser burr” from the edges of the long sockets on the cab back. The right hand rear cab side you are about to glue in needs to be fully seated in its socket so there are no gaps left in the cab corner. You should find that the tongue on the side sheet projects very slightly from the back surface.

Glue the right hand, rear side sheet (the wider of the two) in place ensuring it is forming a nice square corner. Once the glue has fully hardened clean up the corner with the emery board to give yourself a nice neat corner.

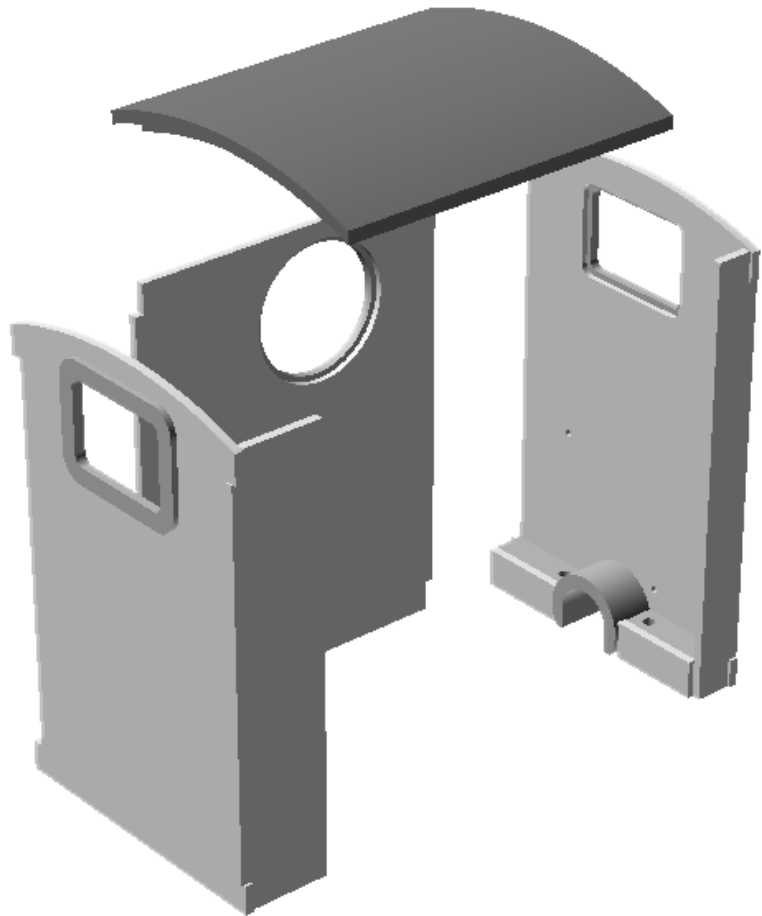


Now repeat for the cab front using two of the long nut retaining tabs

Glue the cab left side between the front and back sheets (TIP temporarily mount the cab front and back sheets onto the chassis with the M2 bolts, but make sure you don't get any glue onto the chassis).

When the glue is set, remove the half built cab from the chassis and glue the cab roof in place.

Now is a good time to paint the bonnet , gearbox cover and cab assemblies.



Glue the window panes into the inside of the cab after removing the protective film. A “canopy glue” like “Micro Kristal Klear” or “Glue ‘n’ Glaze” works best for this.

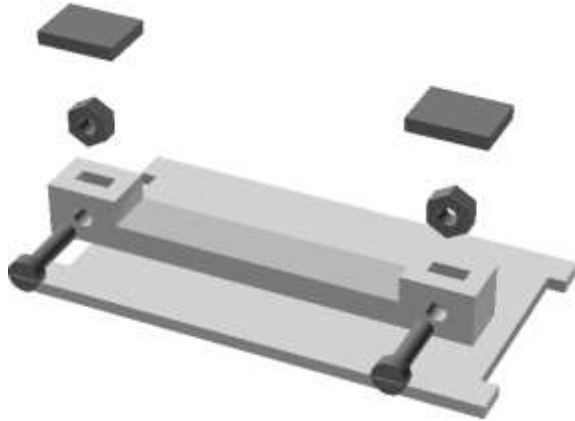
Most photos show that the round side window is left unglazed. (Talking to a former Ruston driver this allowed the driver to lean back out of the window to check if the train is still on the rails!). However we found one photo which seems to have it glazed so we include all 3 window panes for you to decide.

Glue the engine throttle and the reversing lever into their locating holes in the cab front. Glue the brake quadrant to the front cab foot.

Step 5 – Back Sheet (optional)

Remove the 3 back sheet components from fret A and peel off the backing film. Clean up any “laser burr” from the edges of the long sockets on the back sheet. The the curved sides you are about to glue in need to be fully seated in their sockets so there are no gaps left in the back sheet corners.

You should find that the tongue on the side sheet projects very slightly from the back surface.

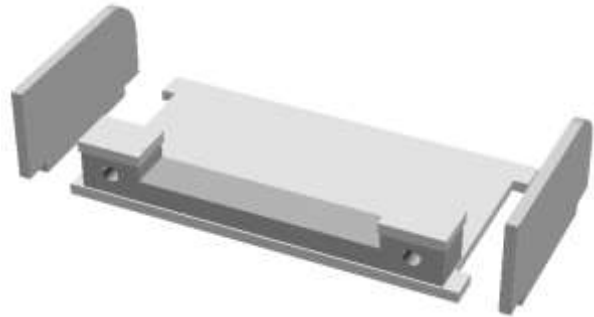


The cab locating feet come joined together with a “printing brim”. Separate them and clean up the edges with the emery board. Also ensure the nut cages are clear of detritus so that the M2 nuts can slide in

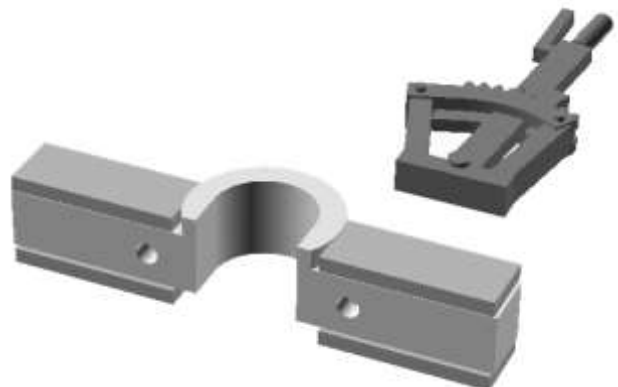
Glue the rear cab foot to the inside of the back sheet. Take care that the bottom edges of the foot and back sheet are flush and that the foot is centered correctly. Push two M2 nuts into the nut

cages; temporarily screw in two M2 screws to locate them correctly and then glue on two small plastic tabs (from fret C) to hold them in place.

Glue the 2 sides into place checking that they are nice and square. Once the glue has set, clean up the outside corners with the emery board so that the “tongues” are flush with the back surface.



Trap two M2 nuts in the front cab foot with four of the long plastic tabs (again temporarily fitting two M2 screws in place helps). Then glue the brake quadrant to the right hand side of the cab foot.



Step 6 – Gearbox Cover

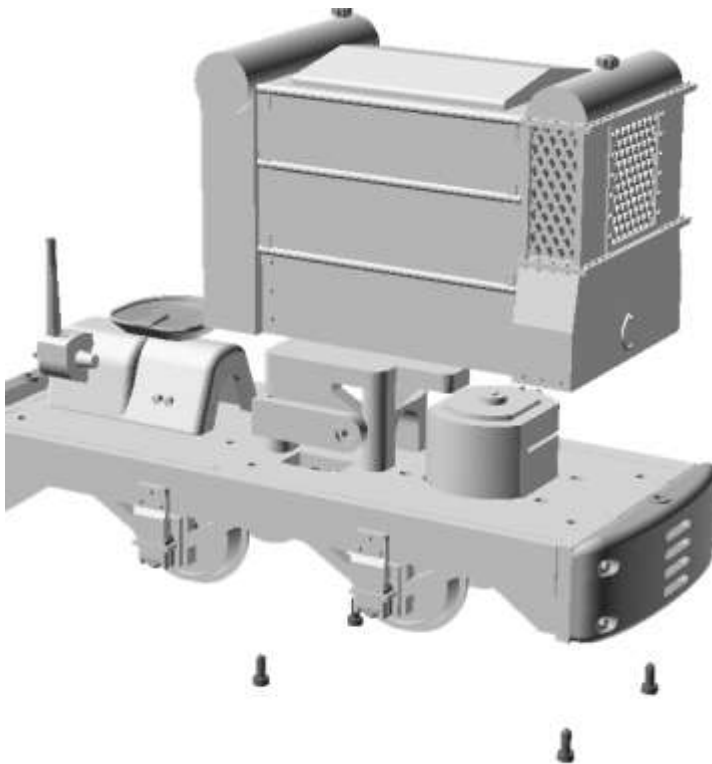
Secure the seat to the gear box cover with a 7mm self tapping screw.

Clean out the location hole in the gear selector body with a 2mm drill bit. Glue the gear selector lever in place.



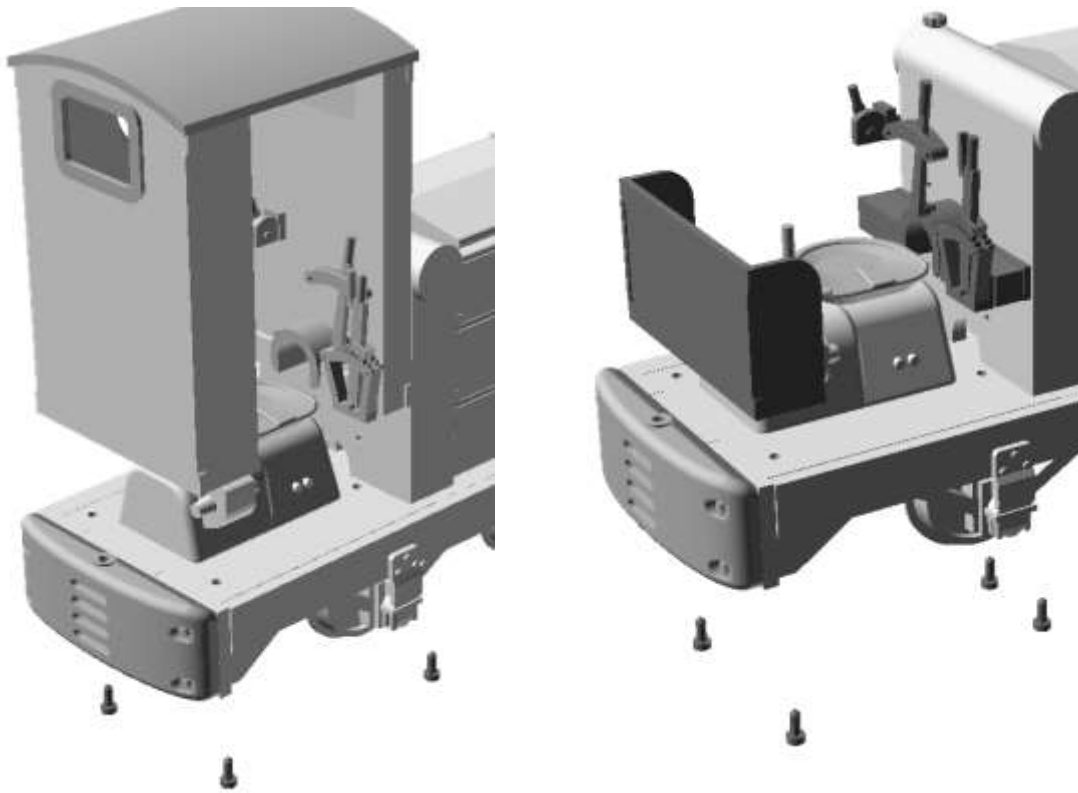
Fit the gear box cover over the wiring connector block at the rear of the chassis with 2 self tapping screws.

Step 7 – Fitting the Bonnet



Bolt the bonnet to the chassis with four M2 bolts. Assuming you stick with the supplied "AAA" battery box, you will find there is sufficient space to add some of the self adhesive tyre weights inside the bonnet before bolting down to increase the loco's adhesion.

Step 8 – Fitting Cab or Back Sheet



Either position the cab behind the bonnet and bolt in place with four M2 machine screws up into the captive nuts in the cab feet.

Or bolt the back sheet to the back of the chassis with two M2 machine screws. Bolt the brake quadrant assembly in place between the gearbox and bonnet with two M2 machine screws.



Glue the reversing lever and the engine regulator lever into their locating holes in the back of the bonnet.

And Finally !

Clean out the buffer's coupling pin hole and fit the "T pin" from the coupling sprue. Trap either the black coupling link or chain in one of the slots (to suit your rolling stock)